Request for Proposals

Aquatic Invasive Species Vector Risk Assessments

Background and Problem Statement:

According to the National Invasive Species Management Plan, an invasive species is "a species that is non-native to the ecosystem under consideration, and whose introduction causes, or is likely to cause, economic or environmental harm, or harm to human health" (National Invasive Species Council 2001). The California Aquatic Invasive Species Management Plan (AIS Plan) recognizes that invasive species can spread rapidly from their point of introduction. The AIS Plan identifies five top priorities from 163 actions developed to address this serious problem. One of these five priorities is to conduct a statewide risk assessment of AIS introduction pathways that are believed to be very important but have not been investigated in a systematic manner. The introduction of AIS from ballast water discharge by commercial ships and from hull fouling of commercial ships has been studied and reported on in California. These are considered to be the largest contributors of AIS, but additional vectors exist that experts believe contribute significantly to AIS introductions. Of the many additional vectors, the AIS Plan and state agency staff have identified the following six vectors as the highest priorities for assessing the risk of introduction, establishment and impacts of AIS in coastal and estuarine California waters:

- commercial fishing;
- recreational boating;
- live bait;
- live imported seafood;
- aquariums and aquascaping (including marine bio-supply companies and internet trade); and
- aquaculture.

These six vectors cause introductions of AIS that are new to the state, as well as introductions of AIS from infested to uninfested waters within the state. A better understanding of the six vectors identified above is needed to improve the state's ability to minimize the introduction and spread of AIS. Information is also needed to develop methods to prevent introductions from the various vectors. Additional vectors may be considered in the future as funding allows.

Goals, Objectives, and Anticipated Outcomes:

The goal of the resulting risk assessment reports conducted for this RFP is to better understand the role played by these six vectors in the introduction and spread of AIS into coastal and estuarine California waters, the harm caused by these invasive species and to develop recommendations on management actions to limit the introduction of AIS from the various vectors. The objective of this project is to compile information and prepare a report for each vector that addresses the report content requirements described below. The information should at a minimum, tell resource managers the significance of these vectors and how they vary based on geography, AIS life forms, and possibly operational differences within the industries or activities involved. The reports will also provide information on the important control points, both geographic and operational, in activities that result in AIS introductions. This information can improve the allocation of limited resources that are available to take action to minimize the introduction and spread of aquatic invasive species. An anticipated outcome of these reports is that the California Ocean Protection Council and other state entities will review the conclusions and develop management recommendations for actions to reduce the introductions of AIS from the vectors.

Report Content Requirements:

All team members of successful proposals will be required to participate in a collaborative process to determine a common set of terms, methodology, and scope for each study so that the results can be integrated in a meta-study.

For each of the vectors (commercial fishing, recreational boating, live bait, live imported seafood, aquariums and aquascaping, and aquaculture), the risk assessment report should address the following topics:

1) Compile a data set of non-native species that have been detected or may have been introduced in the past by this vector. For each species specify, if known,:

    - Geographic origin;
    - Year and location establishment first detected;
    - Extent of subsequent geographic spread;
    - Ecological, economic, or other impacts – including any quantitative assessments of economic impact; and
    - Based on analysis of impacts and extent of spread, evaluate which species should be classified as invasive.

2) Evaluate the statewide rate of introductions from this vector and how the rate varies within different coastal and estuarine habitats and regions. The rate of introduction scale should be as fine as the data supports, but must include decadal rates at a minimum. If possible, estimate the quantity of organisms introduced regionally and statewide by this vector annually.

3) Based on what is known about the vector, describe the species (or other taxonomic level if species-level data are not available), life stages, functional, or trait-based groups (*e.g*. filter feeders, ecosystem engineers, large predators, weedy or clonal species), and geographic origin of AIS that are more or less likely to be introduced by this vector. Describe variance based on different geographic regions along the length of the coast. Evaluate, to the extent possible, whether this variation is due to different rates of introduction by this vector or different levels of success with establishment.

4) Describe and evaluate the factors that affect the rate of introductions and likelihood of establishment and spread for this vector (*e.g.* paints or types of equipment used on boats, characteristics or practices of companies that import or distribute live seafood, organisms for aquaria or ponds). Describe how these factors vary and describe, generally, how this variation affects the rate of introductions and likelihood of establishment and spread for this vector.

5) Evaluate the extent to which this vector serves as a primary or secondary means of dispersal. If a secondary vector, describe the relationship between the primary and secondary vectors.

6) Describe general characteristics that are significantly distinct about this vector in comparison to the other vectors being studied for this project and commercial shipping vectors.

7) Based on current conditions and existing sources of information (*e.g.* peer-reviewed literature, conference proceedings, and government or private sector reports), identify and describe the potential ecological, physical, economic, industrial, recreational, cultural and societal impacts of introductions from this vector. Explain in general and, for cases that are well documented, provide specific examples from the literature in a narrative and tabular format based on a provided template to illustrate the described impacts.

8) Provide an assessment of potential future trends for this vector that are likely to affect the rate of introduction, types of species, location, and potential establishment of new invaders. This should include an assessment of future introductions and establishment based on potential changes in societal or industry trends, technological innovations, and climate change.

9) Based on assessments described above, estimate the risk from this vector, in order to summarize the likelihood of establishment and harm from AIS introduced by this vector.

10) Describe possible geographic, operational, and educational control points that are management opportunities to prevent or limit the introduction of AIS from this

vector. If relevant, include analysis of opportunities to improve regulation of flow of species imported through the federal and private postal service entities (including internet sales). Provide specific information that will help design and implement management interventions that could prevent AIS introductions from this vector and relative ease, feasibility, and cost of each intervention.

For all components of the project, include federal and non-traditional sources of information (*e.g.* sociological research, oral interviews, etc.)

Meta-study of the Six Vector Risk Assessment Reports:

After the risk assessment reports for each of the six vectors are completed, OST will announce another RFP that will take the results and recommendations of these risk assessment reports and integrate them into a meta-study. This meta-study will compare characteristics of the different vectors and evaluate the relative risks of the different vectors. The study will recommend priority management actions, with consultation with the California Aquatic Invasive Species Team (representatives from state agencies managing invasive species).

Proposal Submission Requirements:

Proposals must include the following components:

1. Identification of Vector(s) Proposed for Study
Identify the vector, or multiple vectors (from the six identified in this RFP) for which the Proposer seeks to be selected to perform a risk assessment study. For all subsequent requirements listed below, provide information specific to this vector, or multiple vectors.

2. Research Team & Statement of Qualification:
List team members and provide information on the roles and responsibilities of each team member for the proposed project.

Include a Statement of Qualification comprised of: a) past projects and publications on aquatic invasive species; b) knowledge and experience working on coastal and estuarine issues in California; c) past projects and publications on impacts of invasive species; d) experience in translating science and writing reports for managers and policy makers; and e) a list of recent projects and contact information for the funders of these projects to be used as references for this proposal.

3. Intended Approach:
Describe the suggested approach to be used and the methodology involved in meeting the stated goals, objectives, and report content requirements. Describe the suggested approach for determining risk. Identify all concerns with description of report content requirements and suggest alternative approaches to address the goals of the project.

Note that the final methodology and definition of terms will be determined by the California Ocean Science Trust (OST) in consultation with all selected researchers for these assessments and based upon the outcomes of a methodology workshop.

4. Workplan and Timeline:
Include a workplan consistent with the following timeline for conducting and completing tasks, ending in submittal of the final report by July 3, 2009. This work plan should describe tasks proposed to be undertaken in order to accomplish the report requirements. Priority will be given to proposals that can meet the following deadlines for deliverables. If you are unable to meet these deadlines, please include justification for and a proposed alternate schedule.

Mid Oct. 2008 - Inventory of all relevant AIS databases and sources of information to be used to perform the analyses (a common database of known or presumed non-native AIS in California's coastal and estuarine waters will be provided to the researchers selected for the project);

Mid to late Oct., 2008 - Participation in collaborative process and workshop to determine a common set of terms, methodology, and scope for each study;

Dec. 15, 2008 – Submittal of an outline for the draft report to California Ocean Science Trust (OST) staff, along with a description of the project methods and the framework for assembly and reporting data gathered for the analyses (OST staff will review and provide requested revisions, if necessary);

April 1, 2009 - Submittal to OST of a draft report and a list of at least 3 potential reviewers (allow for a 1 month OST peer review period of draft report);

May 25, 2009 – Submittal of a final draft report that has been revised in response to comments by reviewers;

June 15, 2009 – Participation in workshop with resource managers, to discuss management implications of analyses and to solicit requested revisions to make reports more accessible and useful for managers; and

July 3, 2009 - Submittal of a final report to OST, including incorporation of comments by resource managers.

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5. Budget:
Present a budget and budget narrative that includes an estimate of all labor, equipment, travel, and materials expenses with sufficient detail related to the tasks described in the

work plan and timeline. Include description of matching funds (including in-kind), if available. Travel related expenses may not exceed the state travel reimbursement rate. Please contact us as needed for clarification on state travel rates. Budgets per vector should be in the range of $50,000-$150,000.

6. Identification of Additional Vectors:
Based on your best professional judgment, identify any additional vectors for AIS in California that may be priorities for future evaluation and specify the top two additional vectors likely to have the most significant impacts to California's coastal and estuarine waters.

7. Cryptogenic Species
Comment on the significance of the number of cryptogenic species and how this issue affects the ability to perform the assessments. This issue will be addressed as part of the development of the common methodology that will be used for the assessments.

Proposal Review Process:

Proposals will undergo a review process where the Ocean Protection Council (OPC) Science Advisor will assemble a team of reviewers, including reviewers recommended by the OPC Science Advisory Team. Reviewers will review, comment, and rank proposals according to the objectives of the RFP. Proposals will be evaluated based on expertise, experience, approach, cost, and ability to meet deadlines. The OST will have staff involved in all stages of the review process, including the technical review and final decision-making of proposals. Announcement of winning bidders will be made within 4 to 6 weeks from submission deadline.

Proposal Submission:

Submit proposals electronically by 5 PM on July 14, 2008 to Dr. Amber Mace, at amber.mace@calost.org. If you have any questions, please contact Brad Hunt at 510-251-8325 or brad.hunt@calost.org.